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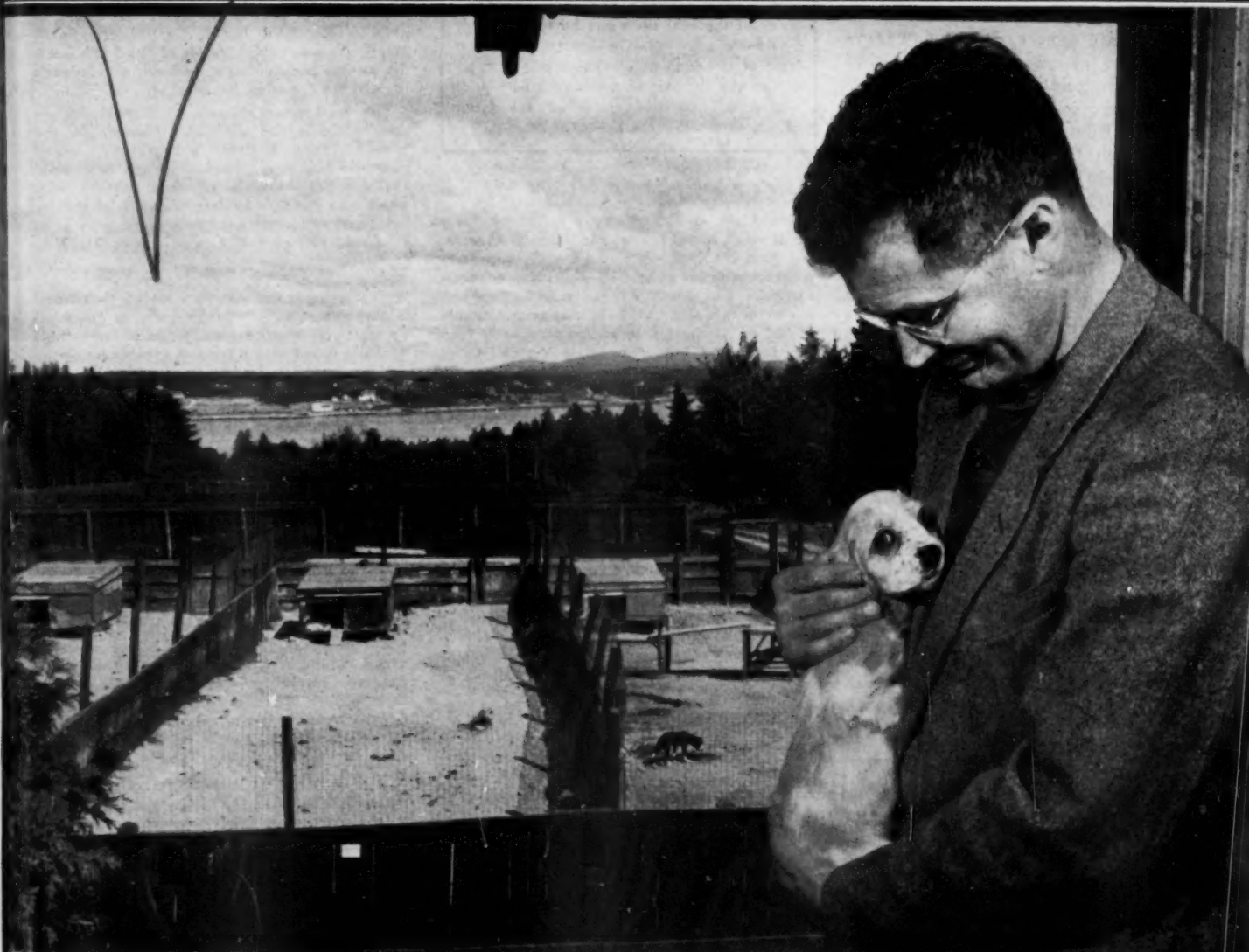
\$5.50 A YEAR

October 17, 1953

VOL. 24, NO. 16 PAGES 241-36

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Nursery for Puppies

See Page 250

A SCIENCE SERVICE PUBLICATION

How Pathfinder Magazine says: *You* CAN DISCOVER THE SECRET OF LOW-COST TRAVEL

from an article in the bi-weekly news magazine, THE PATHFINDER.

Dream trips you can afford:

ROUND THE WORLD FOR \$498

THE LITTLE Tyrhennia Line steamer *Olbia* takes a couple of days to butt through the Mediterranean, from Genoa via Leghorn to brigand-riddled Corsica. If you're aboard, don't stay up late watching the wild mountain dances of Ligurian peasants on the steerage deck. For you must be on deck at dawn—while you pass the lone island of Capraia, with salt-brown Elba to the south—to watch for the high Corsican peaks to show above the horizon.

At \$6.50 (including five full meals) the *Olbia's* voyage is a fair example of dream trips you can afford. And there are others—colorful journeys to exotic lands that often cost little more than your vacation at home. Trade your usual beach for a houseboat in the Vale of Kashmir, or a cruise among the lesser Caribbean islands by native trading schooner.

You can travel clear around the world—to South Seas coral isles and the misty lakes of New Zealand, to Australia and the plains of Africa, to Europe's leisurely antiquity—for just \$498 in fares. That long steamer jaunt can be duplicated in ten days by plane for \$1,700, but where's the fun?

Last year, 52 million Americans spent a record of \$12 billion on vacations. Many went on organized cruises at prices from \$125 to \$25,000. But some traveled off the tourist track, got cheaper and more glamorous vacations.

JUST REMEMBER

- • Bargain paradises get that way because they haven't been discovered by tourist mobs. They're harder to find and to reach—but more rewarding.
- • Chromed ocean liners and international hotels are America transplanted. For fun at budget prices, go by freighter and stay at pensions.
- • Make your longest hop from Europe, not directly from the U. S. Currency differentials and lower European rates can save up to 50%.
- • Don't go unless you're ready to plan well ahead and to shop for travel bargains.

CARIBBEAN There are still undiscovered Edens at America's back door. Tobago, the Robinson Crusoe island that rivals Tahiti, where living is so cheap the island's chief official gets only \$240 a month. Or, Grenada, which, as a native described it: "Dis islan', suh, is t'ing Gahd mek from rainbo'." There, for \$12 a week, you can rent a 3-bedroom house with its own private beach. Many of the best spots can be reached only by trading schooner. Go down to the waterfront at Grenada or elsewhere and bargain with dusky skippers to make your own price—keep this up and cruise all the lesser islands of this jeweled chain.

Here's a sampling of dream trips

Round the World. Every 2 months a Shaw Savill vessel leaves London for Curacao, Panama, and New Zealand. Cross the Pacific, change at Wellington for another SSL ship going west via Australia and South Africa back to England. Minimum fare about \$498—but the trip is usually booked up 15 months in advance. (Reach London for about \$175 from New York.) Other round the world trips from the U. S. as low as \$250-\$300 a month via deluxe freighters.

India. Minimum fare from New York to Ceylon, India, or Malaya is about \$350. Transshipping in England, you can make the trip by luxury liner (tourist class) for \$319. Go to the lotus-covered mountain lakes of Kashmir, where a furnished houseboat with four turbaned servants rents for \$70 a month. Total costs for a couple run around \$175 a month—in the most beautiful spot on earth.

South Seas. You can still live the life of a Tahitian beachcomber—but not in Tahiti, which has found out about the Yankee dollar. Instead, drowse on brilliant Sigatoka Beach at Suva or watch Pacific combers crash on reef-girt Norfolk or Lord Howe Islands. (You can reach the South Seas by freighter from the U. S.)

Africa. Perhaps the biggest travel bargain today is a 70-day luxury cruise around the Dark Continent, calling at a score of colorful ports like Dar-es-Salaam, for \$660, round trip from London. (Combine this with a low cost tour of England!)

Mediterranean. A two-week cruise to Malta, Naples, Casablanca, and Lisbon starts as low as \$92, round trip from London. But try a longer stay—in the lush valleys of Mount Olympus on Cyprus, where a couple can live comfortably for \$1,400 a year; on Aegean islands that hide remnants of a 5,000-year-old civilization among olive and cork groves; or with the fisherfolk of rocky Sardinia, where hotel rates are 24c a day or \$1.12 with three good meals.

Atlantic Islands. Green cones standing out of the sparkling waters of the South Atlantic—these are the Azores and the Canaries. Tropical flowers, sandy beaches, and the charm of old Spain are combined here—with rents of about \$20 a month, groceries for a couple at \$10 a week and servants \$5 a month each.

The vagabond voyager with a fistful of dreams can get aids to planning from these 2 guides:

BARGAIN PARADISES OF THE WORLD

This is a book on how to double what your money can buy. For that is what spending a few weeks or months, or even retiring, in the world's Bargain Paradises amounts to.

Throughout, you learn where to spend a while in the West Indies, Central and South America, the healthful islands of the South Seas, the wonderlands of New Zealand, the Balearic Islands, the Canaries, Madeira, etc.

You read about "Lands of Eternal Springtime," "Californias Abroad," "Islands in the Wind," "Four Modern 'Shangri-Las'," about mountain hideaways, tropical islands as colorful as Tahiti but nearer home, about modern cities where you can live for less, about quiet country lanes and surf-washed coastal resorts.

About 100 photos, 4 maps. Price \$1.50

TRAVEL ROUTES AROUND THE WORLD

With this book you can stop saying that travel is too expensive. Passenger-carrying freighters do offer you a way to see the world for as little as you'd spend at a resort. And what accommodations you get—large rooms with beds (not bunks), probably a private bath, lots of good food, plenty of relaxation as your ship speeds from port to port.

Trips to Rio and Buenos Aires, to the West Indies, between California and New York, out to Hawaii—trips to almost everywhere—are within your means.

There are round-the-world voyages and shorter trips too. Fast, uncrowded voyages to England, France, the Mediterranean; two- or three-week vacations to the West Indies or down the Pacific Coast.

This book names the lines, tells where they go, how much they charge, briefly describes accommodations. It includes practically every passenger-carrying service starting from or going to New York, Canada, New Orleans, the Pacific Coast, England, France, Scandinavia, the Mediterranean, Africa, the Near East, the Indies, Australia, the South Seas, Japan, Hawaii, etc. It's yours for \$1.00.

To get these books, fill in coupon below:

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I have enclosed \$_____ (cash, check, or money order). Please send me the books checked below:

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BIOCHEMISTRY

Make Pituitary Hormone

Oxytocin, important in childbirth and lactation, is synthesized, marking the first time that a hormone from the pituitary gland has been made artificially.

► **SYNTHESIS FOR** the first time of a hormone from the pituitary, often called the body's master gland and famous as source of anti-arthritis ACTH, is announced by Dr. Vincent du Vigneaud and associates of Cornell University Medical College at the New York Hospital-Cornell Medical Center in New York.

Synthesis of a second hormone from this same gland has almost been accomplished, Dr. du Vigneaud also reports.

The first hormone is oxytocin, important in childbirth and lactation. The second is vasopressin, the blood pressure raising and antidiuretic hormone of the pituitary.

Associated with Dr. du Vigneaud in synthesis of oxytocin were Drs. Charlotte Ressler, John M. Swan, Carleton W. Roberts, Panayotis G. Katsoyannis and Samuel Gordon.

Working with him on vasopressin were Miss H. Claire Lawler and Dr. Edwin A. Popenoe.

Details of the synthesis of oxytocin and the chemical structure of vasopressin with signs of success in its synthesis are reported by the Cornell researchers in the *Journal of the American Chemical Society*.

Oxytocin gets its name from the Greek word for "rapid birth." Its effect in causing contractions of the uterus make it important in childbirth, while it also influences release of milk in the mammary glands.

The achievement of the synthesis of oxytocin establishes the structure of this hormone and opens the door to many new investigations in biochemistry, pharmacology and physiology, which should lead to a better understanding of the function of this important principle, Dr. du Vigneaud pointed out. Such a synthesis may also provide an unlimited source of the oxytocic hormone for possible expansion of its use in clinical medicine, particularly in obstetrics, and in veterinary medicine, he said.

Tests of synthetic oxytocin, by Dr. R. Gordon Douglas, Dr. Kenneth G. Nickerson and Prof. Roy W. Bonsnes of the department of obstetrics and gynecology, showed it fully effective in stimulating labor in humans. It also possessed milk-releasing activity. About one-millionth of a gram of either the natural or synthetic material injected into a woman's veins induced milk release in 20 to 30 seconds. (A gram is about one-thirtieth of an ounce.)

Oxytocin is a polypeptide and the first polypeptide hormone to be made synthetically. It is made up of eight amino acids: leucine, isoleucine, proline, tyrosine, glutamic acid, aspartic acid, glycine and cystine. It also contains three molecules of ammonia.

Five of the amino acids are in a ring-like structure with three in a chain at the side. The two sulfur atoms of cystine are in the ring.

Vasopressin is believed to have a similar structure. It is made of eight amino acids and three molecules of ammonia. Six of the amino acids are the same as those in oxytocin, but the leucine and isoleucine are replaced by phenylalanine and arginine.

Oxytocin from hog glands appeared to be the same as that from beef glands, but a surprise was encountered with vasopressin. Dr. Popenoe, Miss Lawler, and Dr. du Vigneaud found that hog vasopressin contained lysine in place of arginine. This may be of far-reaching significance and the hormones from other species are being investigated, Dr. du Vigneaud said.

Science News Letter, October 17, 1953

SURGERY

Find Survival Limit For Lung to Be Grafted

► **IF SURGEONS** ever dare to graft a lung from one person to another, as skin, bones, nerves and blood vessels now are grafted, they will have at least a half hour in which the lung can be separated from its original owner before being stitched into the body of its new owner.



STUDY PRECIPITATED PARTICLES—To examine the precipitates formed by mixing chemical reagents, Drs. Robert B. Fischer and Joseph P. Ellinger of Indiana University have devised a technique using a one-step, shadowed replica for the electron microscope. A direct view of lead chromate particles is on the left, a shadow replica on the right.

In dogs this length of time, 30 minutes, seems to be the upper limit for any appreciable survival of breathing function in a lung completely cut off from a blood supply, Drs. Brian Blades, Howard C. Pierpont, Abdussamed Samadi and Robert P. Hill of George Washington University School of Medicine, Washington, D. C., reported to the American College of Surgeons meeting in Chicago. Whether a human lung could survive longer was not stated.

In the studies reported the lung was not removed from the dog. Instead, the blood supply was shut off for varying periods of time, then turned on again, as it were. At this point the lung was gently reinflated. Test of its ability to function came when the lung on the opposite side was removed.

Science News Letter, October 17, 1953

SURGERY

First Half Hour Critical Period in Heart Wound

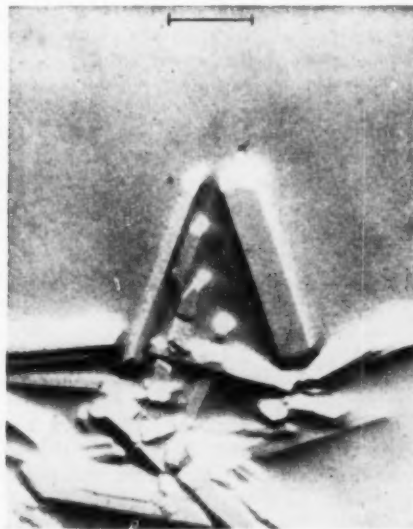
► **PATIENTS WOUNDED** in the heart who reach the hospital alive at least 30 minutes after the wounding have a good chance of recovery without operation.

Studies of dogs that suggest this were reported by Drs. H. LeRoy Brockman, Denton A. Cooley and Michael E. DeBakey of Baylor University College of Medicine at Houston, Tex., at the surgeons' meeting.

Chances of dying immediately are a little greater if the wound is in the left ventricle of the heart, the chamber that pumps oxygen-rich blood from the lungs to the body, than when the wound is in the right ventricle, the chamber that pumps blood to the lungs to pick up oxygen.

Bleeding is likely to be greater from right ventricle wounds than left.

Science News Letter, October 17, 1953



AERONAUTICS

Airplane Wiggle Traced

► A PECULIAR wiggly motion of airplanes has been traced to fuel sloshing in the fuel tank, the National Advisory Committee for Aeronautics has found.

Wiggly airplanes have bothered pilots for years. Although their noses may be pointed straight ahead, planes often weave sidewise and occasionally up and down, even in calm air.

With the cruising and fighting speeds of jet planes being pushed ever higher, this wiggly motion has become more dangerous. A jiggle at the wrong time might be disastrous.

Planes have a tendency to wiggle from side to side anyway, reports Albert A. Schy of NACA's Langley Field Aeronautical Laboratories. This tendency is called the natural airplane frequency. It compares to the back-and-forth motion of the balance wheel in your wrist watch.

If something "kicks" the airplane just at the right instant and in the right direction—the way your watch spring "kicks" the balance wheel through a complex train of gears—the jiggly motion of the airplane becomes even more pronounced. Gas slopping from side to side in the fuel tank can provide the "kicks."

When the gas sloshes from side to side with the same regularity of the airplane wiggles, the airplane oscillations are built up and conceivably could reach deathly proportions, according to an NACA expert.

Jet planes, which generally carry more fuel than piston-engined craft, thus are more affected by sloshing fuel because of the greater weight being thrown about in the fuel tanks. In aerial combat where maneuverability is at a premium, this "snaking" motion is a handicap.

But Mr. Schy reports that sloshing fuel can be controlled by baffles installed in the fuel tanks. The baffles disrupt the normal sloshing movements of the fuel so the fuel "kicks" are much weaker and come at the wrong time. This sets up turbulence in the fuel that helps to dampen the normal weaving of the plane.

Mr. Schy speculates that fuel turbulence might be responsible for greater airplane stability reported in "rough" air than when the plane is flying in calm air. With the whole airplane being tossed about by hefty up-drafts of air, the fuel is kept from sloshing in its tank at the frequency that gives trouble.

Science News Letter, October 17, 1953

DENTISTRY

Dentists Now Using 3-D

► A 3-D test, that is, three-dimensional analysis in color, for determining stresses and strains in jacket crowns for teeth was reported by Dr. Charles B. Walton, University of Pittsburgh School of Dentistry, at the meeting of the American Dental Association in Cleveland.

Jacket crowns are the white caps designed by dentists for front teeth. They sometimes break in normal use. The new tests locate the areas of strain, so dentists can learn the best suitable shape for a crown that will be stable enough not to rotate and strong enough not to crack.

In the tests, a crown is placed over a core, just as it would be placed over a tooth, and then it is subjected to a load, or strain, at high temperature. Dr. Walton explained:

"It was decided (in research) that if a large plastic prototype of a jacket were loaded on an appropriate core and then sectioned, we could, by viewing the sections in polarized light, find the precise areas of detrimental strain.

"Certain changes of core shape might then be made to reduce these strains and thus reduce the incidence of fracture of jacket crowns."

By the combination of heat and load, the strains developed within the plastic are "frozen" within the specimen. The speci-

men may then be sectioned for three-dimensional analysis. These sections are viewed by transmitted polarized light in a polariscope and the points of strain may be photographed and analyzed to determine their magnitude. The areas of strain show up as bands of yellow, red and green in white light.

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SURGERY

New Operation, Pills For Ulcer Patients

► A NEW operation and potassium pills are making life easier for ulcer patients. Both were reported at the meeting of the American College of Surgeons in Chicago.

The new operation converts the stomach into a long tube instead of a lima bean. The major part of the acid-secreting area is removed but vagus nerves are left intact. Among the advantages are less distress after meals, less weight loss, less diarrhea, no iron deficiency anemia and fewer symptoms of "dumping syndrome." Good results in 82 patients were reported by Drs. Lloyd D. MacLean and Richard Lillehei of the University of Minnesota.

The potassium pills, taken before meals, prevent the "dumping syndrome" symp-

toms of weakness, sudden perspiration, dizziness, nausea, crampy pain and desire to lie down which afflict many patients who have had most or all of their stomachs removed. The good results with them were reported by Drs. Allen Kleiman and Austin R. Grant of the Veterans Administration Hospital, Phoenix, Ariz.

They believe the syndrome results from a temporary deficit of potassium. All 11 patients treated to date are symptom-free on a normal diet.

Science News Letter, October 17, 1953

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MEDICINE

**Complete Lack of G.G.
Found in 14 Patients**

► DOCTORS NOW know at least 14 patients who are completely lacking in G.G., or gamma globulin, blood substance famed for its use in fighting polio as well as measles and hepatitis.

The case of one, an otherwise normal nine-year-old boy, was reported by Col. Ogden C. Bruton of the Army Medical Corps at the meeting of the Medical Society of the District of Columbia. Col. Bruton is chief of pediatrics at Walter Reed Army Hospital in Washington.

Besides reporting his case, Col. Bruton said that Dr. Charles Janeway of Boston had recently reported seeing five such patients and knowing of five or eight more.

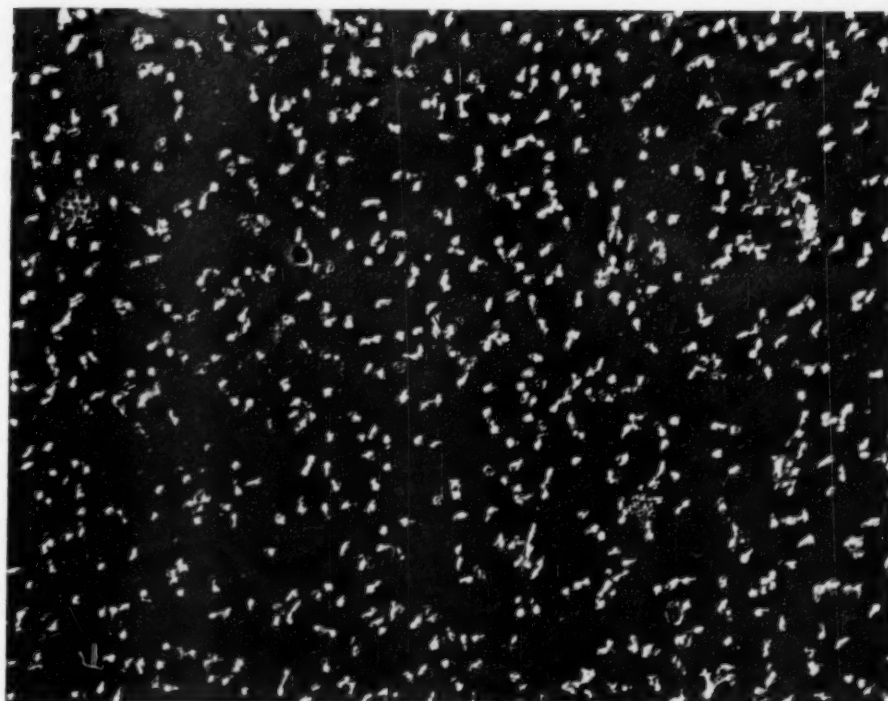
Gamma globulin is the part of the blood that forms antibodies to fight various disease germs. Col. Bruton's patient had 19 attacks of blood stream infection, 10 of them caused by pneumonia germs.

Girls and women seem to escape this G.G. lack in their blood. At least, no case so far has been reported in a female. The condition seems to run in families. This is suggested by the fact that the mother of one patient said she had five brothers all of whom died of infection at an early age.

Whether these patients are born with this defect or get it some time after birth as a result of disturbance in the mechanism for forming gamma globulin is not known. Col. Bruton thinks the latter may be the reason, since his patient lived four and a half years without serious infection and only after that period began to have trouble.

Monthly doses of G.G. are keeping the lad in good health and free of germ poisoning.

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CANCER VIRUS MAGNIFIED—The area shown here contains hundreds of the virus particles, magnified 15,000 times, that cause fowl leukosis, a cancer of the blood and lymphatic tissue in chickens. Dr. Gordon Sharp of Duke University says this is one of the best pictures he has made.

BIOPHYSICS

Speed Cancer Research

► COUNTING CANCER viruses, an integral part of cancer research which used to involve months of work, can now be done in a matter of hours, thanks to a new measurement technique which does not require virus purification as the old ones did.

In addition to stepping up research on virus cancer in human beings, this new method of virus counting, developed by Dr. Gordon Sharp, a biophysicist in the Medical School at Duke University, is expected to be a valuable help in: 1. finding a test for leukosis in chickens, a cancer disease that now costs farmers thousands of dollars a year, 2. producing better vaccines by establishing accurate measurements for the proper balance between virus and immune antibodies, and 3. studying the human influenza virus.

Only 1/30 of a drop of unpurified blood plasma is needed for the counting process. Spun down in a centrifuge with a force 13,000 times that of gravity, the virus particles contained in the plasma descend to the bottom of a test tube, where a jelly-like substance called agar has been placed to collect the particles. From the agar, the particles are transferred to a collodion coating and placed under an electron microscope, ready for counting. In a few seconds the number of particles in a given area is determined.

A quick calculation yields the number in the particular sample of plasma used, usually one cubic centimeter.

The purification of the virus of all foreign matter, which was necessary in the old counting processes, is what made them take so long. They also required samples of plasma 10,000 times the size used in the new process. This means that, whereas formerly several chickens were needed to supply enough plasma for virus counting after purification, now a single three-day old chick can give the required small sample and still survive the loss.

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AERONAUTICS

**2,500 MPH Winds Sweep
Through Wind Tunnel**

► A SUPERSONIC wind tunnel, billed as the world's most powerful, now is under construction at the Arnold Engineering Development Center at Tullahoma, Tenn.

To be used by the Air Force in developing future planes and guided missiles, the tunnel will be fed by five giant compressors running in tandem. The finished machine will generate 216,000 horsepower and produce gales of 2,500 miles an hour.

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ELECTRONICS

**Transistor Hearing Aids
Operate at Lower Cost**

► CHIEF PRESENT advantage of transistor hearing aids comes through lower operating costs, the *Journal of the American Medical Association* (Oct. 3) states.

Transistors are a recent development in the electronic field which are being used in hearing aids as substitutes for vacuum tubes. They may reduce operating costs by as much as 80% or more. This is because the transistor hearing aid needs only one battery and no heater current.

"At present," the medical association reports, "it seems that the size and weight of the hearing aid will not be changed appreciably. There does not seem to be any significant improvement in amplification, in tone quality, or in fidelity of the transistor hearing aid over other kinds."

"The purchaser should insist on a written guarantee to cover possible mechanical and electrical defects in the instrument."

Science News Letter, October 17, 1953

DERMATOLOGY

"Housewives' Hands"

Structure of keratin, a fibrous protein forming the skin's outer layer, is changed when exposed to solutions of 15 randomly selected detergents.

► THE SKIN inflammation known as "housewives' hands" is due to damage to the keratin of the skin, scientists at the University of Pennsylvania have discovered.

Keratin is a fibrous protein whose mesh-work forms the predominant part of the outer, horny layer of the skin.

The finding was made through a method of determining the effects of soaps and detergents said to be more accurate than any previously known method. It was developed by Dr. Eugene J. Van Scott of the university and Dr. J. B. Lyon, a visiting scientist from Westminster Hospital, London, England.

Doctors are seeing more cases of "housewives' hands" and kindred skin irritations these days, and at the same time production of new soaps, powders and other detergents for cleansing has increased. Concern over this situation has led manufacturers to join with scientists in seeking new information on the matter.

The University of Pennsylvania scientists, under the direction of Dr. Donald M. Pillsbury, picked at random 15 of the leading detergents to be found in any average market place. These were tested to see whether

they could cause any changes in human skin. Changes were found in the structure of the keratin molecule under the action of solutions of the 15 detergents.

The keratin molecule is something like a rope ladder with parallel sides and cross connecting rungs. Between the intact rungs of this figurative ladder are other chemical units called sulfhydryl groups. They are made of sulfur and hydrogen.

Most of the 15 detergents tested caused sulfhydryl groups to appear in much greater than normal numbers in the keratin. All of the detergents had some effect, but about half of them, the scientists report, should be well tolerated by normal skin if reasonable precautions are taken to avoid prolonged exposure.

The natural oils of the skin protect the keratin a little against the effects of several of the detergents tested.

Those who must use soaps and detergents excessively, the scientists advise, should apply a proper protective to the hands before, and thoroughly rinse the skin afterwards. If this does not give enough protection, rubber gloves should be worn.

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ENGINEERING

Stereophonic Sound

► A NEW process is in the works for recording stereophonic sound on magnetic strips, then attaching the strips to professional movie film like decals.

Dr. Wilfred W. Wetzel, technical director of Minnesota Mining and Manufacturing Company's magnetic products division, told SCIENCE SERVICE that the process some day also may be used to add magnetic sound tracks to home movies.

Dr. Wetzel, who received the 1953 Samuel L. Warner Memorial Award for his work in motion picture sound engineering, said the new magnetic sound tracks use a special high-output magnetic oxide that yields the same quality of sound but requires far less space on the film than present optical sound tracks. This permits stereophonic sound recorded on three sound tracks and one control track to be substituted for the single sound track now widely used.

Advantages of the new system lie in the uniform magnetic coatings, the ease of their application to film, and their higher sound output. Unskilled workers can slip the sound tracks onto the film.

Billed as an added attraction to some third-dimensional movies, stereophonic sound largely has been reproduced so far from a separate, extra-wide strip of magnetic tape. This tape is run on a special playback machine that must be carefully held in step with the movie projector. But synchronizing problems are avoided by the new sound-on-film process.

Each of the new decal-like sound tracks occupies a strip only 60 one-thousandths of an inch wide on the film. The present optical sound track on most films requires a strip 200 one-thousandths of an inch wide.

Dr. Wetzel said the actual make-up of the new recording material is still classified as a trade secret. However, he said his company has been developing it for two years.

A new playback head is being developed for the tape sound tracks on motion picture film that is said to last "10 to 10,000 times longer" than those currently in use.

Dr. Wetzel said that the playback head now being investigated consists of a "ferrite core" which already has played back film sound tracks for 2,000 hours with no perceptible wear.

He described the ferrite core as a ceramic material having magnetic properties. It is being developed to replace the mu-metal, an iron-nickel alloy, normally used in tape playback heads.

Dr. Wetzel, who created the first practical plastic-coated magnetic tape, said playback heads now in service in theaters last only about 300 hours, and that it costs nearly \$500 to replace them. This figure includes the service man's expenses.

Science News Letter, October 17, 1953

MARINE BIOLOGY

Underwater Murkiness Removed by Filtering

► THE MURKINESS that keeps divers and underwater cameras from seeing very far or very clearly nearly disappears if the water is filtered.

This is true at least in the Chesapeake Bay, Dr. Wayne V. Burt, until recently of the Chesapeake Bay Institute, Annapolis, Md., reports in *Science* (Oct. 2). Small particles of matter that can easily be filtered out, he has found, are the main limiting factor on underwater visibility, although some scientists have believed that coloring matter dissolved in the water was the reason for limited seeing.

The U. S. Navy supported Dr. Burt's research, part of a general study to learn the depth of light penetration and the reasons for light scattering under water. The minute plant and animal life on which fish feed are found only in the layers to which light penetrates. Thus how deep the light goes controls the food supply, and, therefore, the fish supply.

In samples of river water, the particles that could be filtered off, Dr. Burt found, were four times better at cutting down the distance light would penetrate than material that passed through the filter.

Science News Letter, October 17, 1953

ELECTRONICS

Pint-Sized Radar Serves Small Boats

► THE MAGIC eye of radar, which can see through fog and darkness, has been adapted to serve the smaller vessels that cram into crowded harbors or sail through treacherous waters.

Particularly designed for tugs, yachts, motor launches and small fishing vessels, the new Raytheon radar can peer ahead 16 miles, plotting the picture of obstacles on a television-like tube. "Echoes" from ships, buoys and land show up as "pips," or masses of light that are interpreted by the user.

A special transparent screen fits over the scope and can be marked upon with a grease pencil. This permits the navigator to keep track of the position of moving ships, to chart their direction and speed relative to his own vessel to avoid collisions.

Science News Letter, October 17, 1953

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MOVING DAY FOR FISH—About one-sixtieth of the fish collection in the Natural History Museum at Stanford University is shown here as it is being moved to temporary storage to allow for remodeling. Jay M. Savage, holding a stuffed sturgeon, has supervised the moving.

BIOCHEMISTRY

Sewage-Grown Algae

► **PROGRESS TOWARD** development of operations combining sewage disposal and algae farming are reported by scientists at the University of California.

Dr. Harold B. Gotaas and W. J. Oswald state that research with a small, experimental pond confirms the suggestion of earlier laboratory work that such a combined operation is possible.

The method would provide an efficient means of sewage disposal, recover much of the nutrients of the land now being lost in the sea, and yield large quantities of fodder for higher animals.

In their experiments, the scientists empty sewage into an open holding pond, then seed the sewage with algae. The algae provide oxygen which makes bacteria in the sewage thrive. The bacteria decompose the organic material, and in the process give off carbon dioxide which stimulates the growth of algae.

From time to time the algae crop is harvested, and the residue of converted waste is shunted into the ocean.

The scientists got their idea from the practice in some cities of treating sewage in large holding ponds. Algae grow in these ponds, but not enough for harvesting.

In the Berkeley experiments, a recirculating pump seeds new sewage with some of

the algae already in the pond. This establishes a continuous process. The scientists found that the faster sewage is taken in the more vigorously algae grow, and at the same time optimum treatment of liquid waste is achieved.

Dr. Gotaas pointed out that other methods suggested for growing algae require "feeding" the plants compressed carbon dioxide and inorganic growth nutrients, both costly. Municipal sewage, on the other hand, contains the nutrients, and is more than free since its disposal is generally expensive.

The experiments indicate that a million gallons of sewage would yield about 1,000 pounds of dry algae. In the San Francisco Bay area, where around 300,000,000 gallons of sewage are produced daily, the yield of algae by such a method would be about 150 tons per day.

Dr. Gotaas said the algae-growing process also appears to be adaptable to many agricultural and organic industrial wastes as well as to sewage.

Emphasis to date has been on algae growth studies. A satisfactory method of harvesting the algae on a large scale will have to be worked out before the process can be put into operation.

Science News Letter, October 17, 1953

CHEMISTRY

New Insecticide Can Get Into Cow's Milk

► **GO EASY** on the use of chlordane and another new insecticide, heptachlor, around dairy barns and pastures where cows feed.

This advice seems justified on the basis of findings reported in *Science* (Oct. 2) by Drs. Bernard Davidow and Jack L. Radomski of the U. S. Food and Drug Administration and Dr. Ray Ely of the U. S. Department of Agriculture.

They fed heptachlor to a cow. Within nine days a more poisonous derivative of the chemical, heptachlor epoxide, was found in the cow's milk at a maximum and constant level of 1.8 parts per million. This would have given a concentration of 44 parts per million in the butterfat, where the chemical is concentrated.

The cow was fed a pretty high dose of the insecticide and the amount found in the milk was "minimal." But since heptachlor epoxide is toxic to mice and probably humans, milk from this cow while getting the heptachlor might have been dangerous, especially for children.

Heptachlor is an ingredient in the insecticide, chlordane, so the warning on the one applies also to the other. The scientists warn, also, that tests should be made not only for the original insecticide chemical, but also for derivatives of it.

Before heptachlor and chlordane can be recommended safely for use around dairy barns and cattle pastures, scientists need to learn the highest amount the cow could eat without having the chemicals turn up in her milk. Studies on this will be the next step.

Science News Letter, October 17, 1953

DENTISTRY

False Teeth Should Look Natural, Not Perfect

► **"ARTISTIC DISARRANGEMENT** of the teeth" makes a set of false teeth look well in the wearer's mouth. The reason is that few people have "perfect" teeth of their own, so a set of perfect teeth looks like false teeth.

The point was explained by Dr. Frank C. Hughes of Indiana University School of Dentistry at the meeting of the American Dental Association in Cleveland.

"Modern denture base materials, together with recent developments in gum characterization have done much to improve artificial dentures (false teeth)," Dr. Hughes said.

The "artistic disarrangement of the teeth" together with characterization of the teeth and gum restoration can, he said, "produce a startlingly life-like result."

Occasionally, whistling and lisping occur with artificial dentures. These sounds may be caused by habit which can be corrected in cooperative work by dentist and patient.

Science News Letter, October 17, 1953

MEDICINE

Cortisone Saving Babies From Rh Blood Death

► CORTISONE, FAMOUS for its relief of painful, crippling arthritis, has saved 75% of babies who otherwise would have died Rh blood deaths.

These "encouraging" results, obtained in 70 cases, were reported by Dr. Oscar B. Hunter Jr., of Doctors Hospital Research Foundation in Washington at the meeting of the Medical Society of the District of Columbia.

The cortisone is given to mothers who have previously had still-born babies because the Rh factor in the mother's blood was incompatible with that of the baby. It is given during the last three or four months of pregnancy.

When to start the cortisone treatment and what sized dose to give are determined by tests of excretion of two hormones from the mother's body. The hormones are 17-ketosteroids and progandiol, an end-product of progesterone.

By following the excretion of these two hormones during the last months of pregnancy, Dr. Hunter finds he can tell how the baby in the mother's womb is thriving. If it is not doing well, it is time to start the cortisone treatment of the mother. Subsequent improvement in the unborn baby's condition can be seen through the mother's hormone excretion.

Since he has been using this hormone check, Dr. Hunter finds he gets better results in helping the mothers to deliver living babies.

Reason for giving cortisone is because it can prevent hypersensitivity reactions, which are what occur when mother's and baby's blood are not compatible in the Rh factor.

Science News Letter, October 17, 1953

ENGINEERING

Spinning Wheel Powers New Swiss "Gyrobust"

► A SPINNING wheel has become the sole power plant in a new Swiss bus that can zoom along silently at a 30-mile-an-hour clip.

The spinning wheel, however, is not the kind great-grandmother used to wind cotton, wool and flaxen fibers into thread, but a 3,300-pound gyroscope rotor.

Whirling in its hydrogen-filled cage at 3,000 revolutions a minute, the heavy rotor turns an electric generator that feeds driving motors on the bus wheels. Once brought up to speed, the rotor will revolve for hours since friction is held to a minimum. But it can power the bus for less than four miles before it has to be "recharged."

To speed the rotor back to a comfortable 3,000 rpm, the motorman drives into a recharging station supplied with commercial three-phase 380-volt electric power. He

presses a button and three antenna-like probes rise on the top of the bus to engage the power station's electrical contacts.

In half a minute to three minutes, the flywheel again is spinning fast enough to power the bus another three and a half miles at 30 miles an hour.

Built by the Oerlikon Engineering Company in Zurich, the 50-passenger bus requires no rails or trolley wires, making its initial cost relatively low. "Recharging" stations are inexpensive to build and require little equipment. Passengers enthusiastically report the bus provides a vibrationless, noiseless, odorless ride.

Science News Letter, October 17, 1953

SURGERY

Radioactive Pills in Brain to Check Cancer

► SURGERY OF the future may include: tiny pellets of radioactive yttrium implanted in the brain to check spreading cancer; lead shields around the spleen to make possible cancer-curing X-ray doses for children; and skin grafts from the dead for badly burned patients. Steps toward these were reported at the American College of Surgeons meeting in Chicago.

The radioactive yttrium pellets would be used because they give off beta rays which penetrate only a short distance. Implanted in the brains of monkeys, they are able to destroy the pituitary gland, Drs. Theodore Rasmussen and Paul Harper of the University of Chicago reported.

Removal of the pituitary by surgery is difficult because of its location in a bone at the base of the brain. Doses of X-rays or radium that would destroy it also would damage neighboring brain tissue. So if removal of this gland can check cancer spread, as some believe, the beta rays from radioactive yttrium may be the answer. At the least, they may show whether this approach to stopping cancer will work.

Lead shielding around the spleens of dogs saved them from X-ray doses that would kill unshielded animals, Drs. Winfield L. Butsch, G. N. Scatchard, S. Anthonie and J. B. Drumm of the Buffalo, N. Y., General Hospital and Children's Hospital, Buffalo, reported. If a way can be found safely to wrap the lead around the spleens of children, it may in future be possible to give them big enough doses of X-rays to cure some cancers of the nervous system and lymph glands. So far, however, no human application of the work has been made.

Human skin from patients recently dead is being grafted on mice in laboratory experiments to determine how long such transplants will live, Drs. James Barrett Brown, Minot P. Fryer, Milton Lu and Peter Randall of Washington University, St. Louis, reported. They hope to learn from these experiments whether skin from the dead can be used to save victims of bad burns.

Science News Letter, October 17, 1953

IN SCIENCE

SURGERY

Stitch Wounds With Stainless Steel Wire

► FOR SEWING up abdominal wounds in complicated cases where the wound might pull apart, stainless steel wire gives good results, Drs. Clarence Dennis, Carlton A. Nelson and Frank B. Ankner of the State University of New York College of Medicine, New York, reported at the meeting of the American College of Surgeons in Chicago.

They have tried it in more than 100 cases in the past three years. Patients report less discomfort than with standard silk stitches. Only one separation of the wound occurred but the steel wire held it enough to keep internal organs from pushing through. One late hernia was seen but no other complications.

Science News Letter, October 17, 1953

SURGERY

Big Shock Needed To Calm Big Hearts

► BIG HEARTS need bigger electric shocks to calm them than normal sized hearts, University of Pennsylvania surgeons reported at the meeting of the American College of Surgeons in Chicago.

Electric shock has long been used to synchronize heart muscle fibers when they have gotten to twitching irregularly in the condition doctors term ventricular fibrillation. The condition starts suddenly and may be fatal if the abnormal twitching is not stopped, since heart muscle fibers must work together to pump blood through the body.

Regular house current, 110-115 volt, 60 cycle AC, is usually strong enough to defibrillate a heart of about normal size. But for enlarged hearts it may not be enough even when given repeatedly. Using a larger current can be dangerous because it might burn the heart.

Heavier current can be used safely, the Pennsylvania researchers found, if the shock is given for just a tenth of a second at a time. A push button could be used for this, but the surgeons pointed out that it would take training to operate it at the right speed and, under the stress of trying to defibrillate a human heart, the push button operator might not be able to time his speed accurately enough. They are looking now for a mechanical way of controlling this.

The team working on the problem consists of Drs. Charles K. Kirby, Julian Johnson, Joseph Engelberg and Roberto Rovis.

Science News Letter, October 17, 1953

CE FIELDS

ANIMAL NUTRITION

Chicks Need Vitamin K When Fed Antibiotics

► POULTRY RAISERS feeding their chicks some of the newer growth stimulators and disease-fighting chemicals should also give the chicks some vitamin K to prevent bleeding.

Vitamin K is necessary for normal blood clotting. Chicks synthesize it in their intestinal tract. But chicks fed on modern rations have been turning up with hemorrhages under the skin, sign of vitamin K deficiency, as early as three weeks after hatching.

Scientists at the University of Illinois and the Agricultural Experiment Station tested various chick diet supplements and found that terramycin and arsonic acid prolonged the blood clotting time significantly, and that arsanilic acid might do so.

The exact mechanism is not yet known but these supplements could act either by affecting the bacteria that synthesize vitamin K in the intestinal tract or by acting as antagonists to it.

The use of greater amounts of solvent extracted soybean meal and lesser amounts of alfalfa would, the scientists point out, tend to reduce the amount of vitamin K in the chick's ration. At the same time growth stimulating and other drugs affect the vitamin K normally synthesized.

The experiments are reported in *Science* (Oct. 2) by Drs. P. Griminger, H. Fisher, W. D. Morrison, J. M. Snyder and H. M. Scott.

Science News Letter, October 17, 1953

SURGERY

Seek Extract From Hibernating Gland

► PATIENTS UNDERGOING heart operations at some future date may get injections of hibernating gland extract or a synthetic duplicate so surgeons can "refrigerate" these patients for safer operations.

Steps toward this were reported by Drs. G. A. Trusler, J. M. McBirnie, F. G. Pearson, A. G. Gornall and W. G. Bigelow of the University of Toronto, Toronto, Can., at the meeting of the American College of Surgeons in Chicago.

The technique of inducing very low temperatures has been investigated during the past six years as a means of letting the surgeon look into the heart as he operates instead of feeling his way. At the low body temperature, blood flow is slowed to such an extent that this can be done.

In the hope of making the refrigeration technique safer, the Toronto scientists have

studied hibernating animals such as the ground hog. These animals can be cooled to as low as 37 degrees Fahrenheit and a two-hour heart operation performed on them safely. But humans cannot be cooled to below about 75 degrees Fahrenheit without risk of heart stoppage or dangerous heart rhythm upset. Normal body temperature in humans is 98.6 degrees Fahrenheit.

The ground hog's cold tolerance, the Toronto scientists believe, is due to a brown fatty tissue that they think acts as a hibernating gland. When they cut out about half of this tissue, the "deglanded" ground hogs could not stand low temperatures as well as with all the gland intact.

For two years the Toronto scientists have been trying to find an extract of this hibernating gland tissue that could be used in laboratory rats to increase their tolerance to cold. If found, such an extract might be purified or a chemical duplicate made for use on humans. The work so far has not reached this stage, but studies of the ground hog are expected to show more about how to refrigerate humans safely.

Science News Letter, October 17, 1953

PSYCHOLOGY

Eyes Can Take It If Homework Longer

► MANY BOYS and girls will be spending longer hours on their homework, if teachers follow the findings reported by Dr. Leonard Carmichael at a seminar at Jackson Laboratory, Bar Harbor, Me.

Dr. Carmichael is secretary of the Smithsonian Institution in Washington, D. C., a member of the Jackson Laboratory's Board of Trustees, vice president and chairman of the executive committee of SCIENCE SERVICE, and former president of Tufts College.

The studies he reported show that most persons can read uninterruptedly for six hours without actually suffering from eye strain or fatigue. This is true for persons reading from both the printed page and from microfilm.

A number of the high school and college students thought what they were reading was dull. These complained of feeling tired, of feeling eyestrain and of "wishing to stop." But the tests did not show any loss of measurable efficiency of reading or any change of understanding the material.

The 20 high school and 20 college students each spent six hours reading Adam Smith's economic treatise, *Wealth of Nations*, volume 2, and six hours reading Richard Blackmore's novel, *Lorna Doone*. Electrical devices gave continuous recordings of every eye movement of each student during each of the six-hour reading periods. The records totaled some 15 miles in length.

Besides suggesting that assignments might be longer than those usually given now, Dr. Carmichael recommended training students, especially in secondary schools, to disregard the tired feeling in reading, since it is only a feeling and not real fatigue.

Science News Letter, October 17, 1953

ENGINEERING

Floating Vacuum Cleaner Sweeps Out Canal Bottom

► CANADIAN ENGINEERS are using what is billed as the "world's largest dredge" to vacuum clean Quebec's 15-mile-long Beauharnois Canal so the Beauharnois powerhouse will get more water for its generators.

Driven by a motor standing 18 feet tall, the dredge's vacuum probe can "suck up" boulders weighing 1,500 pounds, General Electric engineers in Schenectady, N. Y., report.

Science News Letter, October 17, 1953

AGRICULTURE

Plant Diseases Cost U. S. Three Billions Annually

► BIOLOGICAL WAFARE is costing the American people an estimated \$3,000,000,000 a year. No human enemy can be blamed for this toll. The enemy is the army of fungi, viruses, bacteria, nematodes and other disease agents that lay waste our crops.

This "startling" figure is revealed by the Secretary of Agriculture, Ezra Taft Benson, in a foreword to the Department's Yearbook which this year is devoted to "Plant Diseases." (See p. 252.)

"The tragic aspect is that much of the loss is a waste that can be prevented," Secretary Benson said. "Waste is contrary to the laws of nature and the conscience of man. Waste is unworthy of a great people."

However, it will not be easy to conquer some of the plant diseases that plague us, he pointed out. Just when we think we have brought a disease under control, as in the case of rust, new forms or new races of old disease-producing organisms appear, and the battle must start all over again on a new front.

One obstacle to final victory is the lack of information about plant diseases among the persons who have to do with growing plants and making use of plant products.

Encouraging developments have been the perfection of varieties of wheat, oats, strawberries and other crops that can withstand, at least for a while, the ravages of a disease. More effective chemicals have also been discovered to add to our armament against plant diseases, but much remains to be done, Secretary Benson declared.

Foundation for the annual Yearbook of Agriculture was laid by Milton S. Eisenhower, brother of President Eisenhower, and editor of the Yearbook from 1928 to 1935. This volume summarizes the results of agricultural research conducted by the Department of Agriculture.

In 1952, the United States invested \$42,874,000 in various areas of such agricultural research. The book is prepared in clear language especially for the use of American farmers.

Science News Letter, October 17, 1953

BIOLOGY

School For Dogs

For centuries man has taught and trained dogs but now he is learning from them. Unique institution has nursery for puppies, record books to keep the students' marks.

See Front Cover

By JANE STAFFORD

► YOU AND I and other dog owners pride ourselves on how well we have trained and taught our dogs. Some dog owners have gone to school with their dogs to learn how best to teach the dogs manners, obedience, and whatever tricks or skills we want them to learn.

Now there is a new kind of school for dogs. In this school, the dogs are really the teachers. As they grow and romp and play, as they learn simple lessons and then more difficult ones, they are teaching a group of scientists facts about behavior that are expected ultimately to help us humans learn to live better with each other.

This unique school for dogs, where the dogs really are the teachers, is kept at the Roscoe B. Jackson Memorial Laboratory in Bar Harbor, Me. This same laboratory is world famous for research on cancer and genetics, and for its stocks of pure-bred mice of many different strains.

Dr. John L. Fuller of the Jackson Laboratory staff is shown on the cover of this week's SCIENCE NEWS LETTER holding a puppy still too young for school.

Environment Affects Behavior

The development of behavior, in mouse, man or dog, is partly a matter of hereditary genes and partly a matter of environment and training.

Everyone who has taken puppies to raise, just as every parent who raises children, knows that no two dogs are exactly alike, any more than any two children are exactly alike. One will be gentle, docile, easy to teach. Another will be spunky, full of mischief, but still smart and quick to learn.

Dogs, like children, show their feelings differently. I know one dog who will quietly retire to her bed if she is hurt because we are petting another dog. But the second dog is more aggressive. If we pet the quiet one, he will try to nose her away or jump on us from the other side, or growl and fuss till he, also, is petted.

A good deal of the difference in people and in dogs comes from the wide differences in the life experience of each individual, whether dog or man. Does Mrs. A nag her husband and children because she inherited a bad disposition, as the neighbors may think, or is it because of the kind of home life she had as a child? Is Mr. B a successful, go-getting business man because he inherited an aggressive trait, or because of his early experiences at home, school and work?

Is one of our dogs quiet and gentle and the other spunky and mischievous because they are of different breeds, or because one lived all her life with the same owner and the other has had three homes in his short life?

Test Heredity's Influence

How to tell the part heredity plays in controlling behavior must be based on the study of individuals of different genetic background reared in exactly the same manner, scientists at Jackson Laboratory tell us. This is just what they are doing. At the dog colony at the laboratory's Hamilton Station, puppies are studied from birth to adulthood under conditions planned for the best social and physical development.

And because for centuries men have selected and bred their dogs for specialized activities, such as hunting, herding, transportation, protection and companionship, there are now pure breeds of dogs ready made for the study to answer the question: How much does heredity contribute to differences in social behavior, learning ability and emotional stability?

Here is what happens to a litter of puppies, from birth to one year of age, at the laboratory's unique school for dogs:

For 16 weeks the young dogs live in large, comfortable nursery rooms arranged for observation. Like human babies they are weighed regularly, and checked for normal health and development. At five weeks the toddler's responses to a human handler are rated in terms of timidity, aggressiveness and attention-seeking. At six weeks they undergo a simple intelligence test, learning how to find their way around a

wire screen which separates them from a desirable bit of food. Later tests involve a simple maze, learning how to get at a covered dish of food, and determining which of two pups wins out when there is only one bone for the pair.

The mother is separated from the pups at 10 weeks, and at 16 weeks the half-grown litter moves outdoors to running pens. Almost every day brings a period of training or testing involving such events as learning to walk on a leash, measurement of changes in heart rate and muscle tension when startled, learning to trail, climb, retrieve and to discriminate positive and negative, or do and don't signals. Each dog accumulates a series of marks in the record book of the school for dogs, and these are subjected to statistical analysis.

Some Results Reported

Headmasters, as it were, at this school for dogs are Drs. J. Paul Scott and John L. Fuller. They tell us that their school will have to be kept for some time before complete results of their studies will be available. Some important findings, however, have already been reported.

For example, centuries of selection under domestication do not appear to have added any new components to the dog's basically wolf-like behavior. There has been an obvious modification in the balance of traits in the dog, particularly a delay of maturation, or growing up, so that he is easily kept dependent, but the social patterns of dominance, submission, courtship, defense of territory and the like remain wolf-like.

Results on the formalized tests of behavior sometimes show striking differences between breed samples. Sometimes they do not. Wirehaired terriers rate higher in aggressiveness than beagles, and basenjis respond to the attention of a human by an accelerated heart rate, while cocker spaniels tend to have a reduced rate under exactly the same conditions. On the other hand, although individual dogs show marked differences in performance in the delayed response test, which measures immediate memory span, it appears doubtful that differences between breeds are significant.

In general, tests of social reactions and of responses to emotionally toned stimuli show inter-breed differences, while more purely mental differences between breeds have not been clearly demonstrated. This is in part due to the difficulty of measuring animal intelligence as an independent entity. But it may also reflect a uniform distribution of the factors of intelligence among the breeds being studied.

The influence of inherited patterns of behavior on social organization is shown by an analysis of the occasional misfits in the training program. One kind of misfit, the

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result of intra-litter strife, is the timid, abused "underdog" that is often undernourished because it is not allowed to feed. This type of maladjustment occurs almost exclusively in litters of wirehaired terriers. The victims often are removed to a less competitive group in order to give them a chance for normal development.

The other type of misfit fails to form a

strong attachment to humans, and does poorly in training procedures which involve cooperation between dogs and human beings. This is often encountered with Shetland sheep dogs, but it can be eliminated by giving the sheep dog more human contacts during the period of socialization from three to ten weeks of age.

Science News Letter, October 17, 1953

Encyclopedia of ABERRATIONS

A PSYCHIATRIC HANDBOOK

Edited by EDWARD PODOLSKY, M.D.

Kings County Hospital Psychiatric Staff

With a Foreword by ALEXANDRA ADLER, M.D.
New York University College of Medicine

This is the first systematic exposition of human aberrational behavior. In this volume over fifty eminent psychologists and psychiatrists discuss all types of aberrations, with particular emphasis on their psychodynamics. The material is arranged in alphabetical sequence for easy reference.

"This most fascinating volume is so wide in scope that it is of interest not only to physicians, psychiatrists, psychologists, lawyers, and sociologists but to the intelligent layman as well. This book is very highly recommended."

—The New York Physician

SOME OF THE ENTRIES:

Abasia	Ecstasy, artificial	Lesbianism
Ablutomania	Erotographomania	Logorrhea
Abulia	Exhibitionism	Lying
Acalculia	Family tension	Malingering
Acataphasia	Fellatio	Masochism
Aggression	Fetishism	Menstrual anomalies
Alcoholism	Folie a deux	Mescaline intoxication
Amnesia	Frigidity	Murderer, mind of
Anal eroticism	Frottage	Mutism
Anancasm	Gambling	Mysophobia
Anti-Semitic attitudes	Gammacism	Narcolepsy
Anxiety, dental	Gelasmus	Necrophilia
Aphasia and linguistics	Gustatory sweating	Negativism
Autism, infantile	Gynephobia	Nudism
Auto-punishment	Hair-plucking	Nymphomania
Benzedrine, addiction	Hallucinations	Ochlophobia
Bestiality	Haptodysphoria	Onanism
Body image disturbances	Hashish, addition	Opium, addiction
Boredom	Head banging	Pavor nocturnus
Brontophobia	Heroin, addiction	Pessimism
Cacodaemonomania	Heterolalia	Pethidine, addiction
Chloral delirium	Homosexuality	Phobias
Chorea	Hysteria	Pornography
Clairvoyance	Iconolagny	Psychosis
Claustrophobia	Illusions	Puberty, aberrational
Cocaine, addiction	Inferiority feelings	Sadism
Crime, neurotic	Intellectual malfunctioning	Schizophrenia
Criminality	Kainophobia	Somnambulism
Depression	Kakorrhaphiophobia	Sophomania
Devil worship	Kleptomania	Suicide
Dream murders	Language frustration	Therianthropy
Dysprosody	Laughter, fits of	Xenophobia
Ecouteur		Zoophilism

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GREENER FIELDS: Experiences Among the American Indians—Alice Marriott—*Crowell*, 274 p., \$3.50. An archaeologist-ethnologist writes this volume about American Indians.

HOW ANIMALS MOVE: The Royal Institution Christmas Lectures 1951—James Gray—*Cambridge University Press*, 114 p., illus., \$3.00. These Christmas lectures are intended to introduce young people to various aspects of science. Here are described the many ways by which animals get about—the squirming worm, leaping salmon and soaring bat, among many others.

LAND BIRDS OF AMERICA—Robert Cushman Murphy and Dean Amadon—*McGraw-Hill*, 240 p., illus., \$12.50. A gorgeous book published with the cooperation of the American Museum of Natural History.

MANAGING YOUR CORONARY—William A. Rams—*Lippincott*, 158 p., illus., \$2.95. A physician writes this non-technical book telling how to live with heart disease.

MENTAL HEALTH AND MS—Molly Harrower—*National Multiple Sclerosis Society*, 42 p., illus., paper, free upon request direct to publisher, 270 Park Ave., New York 17, N. Y. Tests show that MS patients show no unusual mental disturbances or intellectual impairment. Neither is there any "typical personality" of MS patients. This booklet helps the patient live with his disease and make the most of his capabilities. The author is a psychologist.

METHOD AND THEORY IN EXPERIMENTAL PSYCHOLOGY—Charles E. Osgood—*Oxford University Press*, 800 p., illus., \$10.00. Stressing, for undergraduate majors and graduate psychology students, the close interrelatedness of fact and theory, and directing their thinking toward as yet unsolved problems needing further research.

MISS PICKERELL GOES UNDERSEA—Ellen MacGregor—*Whitlsey House*, 127 p., illus., \$2.25. Scientific information about the ocean depths is presented for young people, sugar coated by Miss Pickerell's adventures in a diving outfit.

PLANT DISEASES: The Yearbook of Agriculture 1953—Curtis May, Chairman, Yearbook Committee—*Govt. Printing Office*, 940 p., illus., \$2.50. Plant diseases cost us an estimated three billion dollars a year. (See p. 249.)

PROGRESS OF LITERACY IN VARIOUS COUNTRIES: A Preliminary Statistical Study of Available Census Data Since 1900—*United Nations Educational, Scientific and Cultural Organization*, 224 p., illus., paper, \$1.50. Not only does the amount of literacy vary in different countries, but also the rate of progress differs. In Finland, for example, the average decennial rate of progress is 36%; in Egypt it is 5%.

THE ROLE OF GROWTH HORMONE IN CARBOHYDRATE METABOLISM—R. C. de Bodo and M. W. Sinkoff—*New York Academy of Sciences*, 37 p., illus., paper, \$1.00. Reporting studies undertaken to determine whether or not anterior pituitary factors other than ACTH have a role in the regulations of normal carbohydrate metabolism.

STEPS IN PSYCHOTHERAPY: Study of a Case of Sex-Fear Conflict—John Dollard, Frank Auld, Jr., and Alice Marsden White—*Macmillan*, 222 p., \$3.50. The therapeutic techniques of the authors are based on theory advanced by Dollard and Neal Miller; it is described as a blend of reinforcement learning theory and psychoanalysis. Instruction is given on how to conduct "brief psychotherapy."

A TIME FOR SLEEP: How the Animals Rest—Millicent Selsam—*Scott*, 56 p., illus., \$2.00. How does a goldfish sleep? What does a giraffe do with his neck when he sleeps? These are samples of the questions answered in this attractive child's book.

THE USE OF VERNACULAR LANGUAGES IN EDUCATION—*United Nations Educational, Scientific and Cultural Organization*, 156 p., paper, \$1.00. The number of languages spoken in the world today runs into many hundreds. Many have no written form. For this and other reasons, over one-half of the world's population is illiterate.

THE WAY OF A SHIP: Being Some Account of the Ultimate Development of the Ocean-Going Square-Rigged Sailing Vessel, and the Manner of Her Handling, Her Voyage-Making, Her Personnel, Her Economics. Her Performance, and Her End—Alan Villiers—*Scribner's*, 429 p., illus., \$6.50. Telling in non-technical language how the big old-time sailing ships were handled and recounting some anecdotes of the sea.

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Dr. Henry Edmonds writes, in the *Birmingham Post Herald*: "We have heard the statement that we live at about 15% of our potential efficiency. Mr. Williams tells us where most of that lost 85% has been hiding."

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Henry W. Lohse, well-known Canadian business analyst says: "This book is a MUST—particularly for people in creative work, for doctors to help them interpret diagnoses and understand their patients, teachers, scientists, research workers, engineers, architects, and many others."

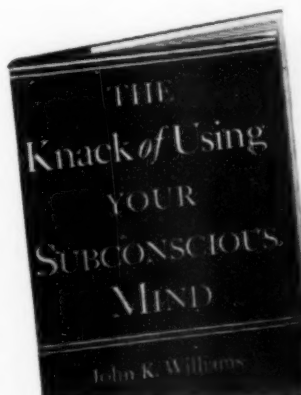


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BIOLOGY

NATURE
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Raccoon

► A CHUBBY little bandit with the brain and dexterity of a second-story man no longer furnishes college sophomores with the touchstone of campus success, but the raccoon is the reason why many youngsters think Daddy was awfully fat while still a member of the Class of '28.

In those days, there was many an athlete who was a lithe demon on the gridiron and a Bacchus, at least in bodily outline, off it. So much for the effects of the coonskin coat.

Raccoons are relatively primitive animals in zoology's family tree, although they more than live up to the black burglar's mask Nature gave them. Like the hands of monkeys and men, the raccoon's paws are

unspecialized: they can be used for a variety of purposes, and usually are. They can unlatch chicken coop gates, husk sweet corn, break open a mussel shell or solve the special marauder-proof lid of a garbage can.

In zoos, raccoons have nearly the pulling power of the monkey house. They handle things incessantly, and in addition splash around fondly in the monkey's bane and horror—water.

It is not true, however, that raccoons instinctively wash everything before eating it. If a crayfish is covered with mud, back into the stream with it for a quick rinse. If an earthworm looks dry and wrinkled, let it soak for a time. The raccoon washes for a reason: despite his fabulous appetite, he cannot be accused of drooling over his food, for his mouth is poorly equipped with saliva glands.

He uses water to help him soften dry, harsh items on his menu. Give him a tree full of red-ripe cherries, or a fine fat frog, and there will be no time lost in needless scrubbing.

With mice, earthworms, birds, fruit, milk corn, frogs, fish, insects, turtle eggs, shellfish and clams on his diet the coon is no lank and stringy specimen. He spends most of his waking hours gorging himself, sleeps off the lethargy of an over-stuffed stomach, then begins another feast. The result is a well-rounded contour which makes raccoon a choice item at sportsmen's dinners, and lets him sleep away long winter weeks without so much as an acorn stored in his hollow tree.

When treed by dogs or backed into a tight spot with his family, however, the roly-poly raccoon is a fierce and reckless fighter. Any hound that lives to an old age after a life of coon-hunting will be covered with scars from slashing paws he could not dodge.

Wary old raccoons resort to many tricks to befuddle dogs hard on their heels. Instances are reported where a coon will lead a dog into a stream, jump on the dog's head from the bank, and thereupon ruthlessly drown the pursuer.

Science News Letter, October 17, 1953

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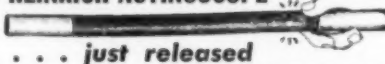
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AGRICULTURE—How much do plant disease cost the U. S. annually? p. 249.

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DERMATOLOGY—What can cause "housewives' hands?" p. 246.

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SURGERY—What is the reason for wanting to "refrigerate" surgery patients? p. 249.

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☐ BEETHOVEN: Two German Dances, Winterthur Symphony Orchestra; Walter Goehr, conductor.

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☐ ROUSSORGSKY: Night on Bald Mountain, Netherlands Philharmonic Orchestra; Walter Goehr, conductor.

☐ MENDELSSOHN: Violin Concerto in E Minor, Louis Kaufman, violinist; Netherlands Philharmonic Orchestra; Otto Ackermann, conductor.

☐ MENDELSSOHN: Symphony No. 4 in A Major, "Italian," Winterthur Symphony Orchestra; Clemens Dahinden, conductor.

☐ MOZART: Piano Concerto No. 20 in D Minor, Frank Pelleg, pianist; Musical Masterworks Symphony Orchestra; Walter Goehr, conductor.

☐ WAGNER: Die Meistersinger von Nuernberg, (Preludes to Acts I and II), Zurich Tonhalle Orchestra; Otto Ackermann, conductor.

☐ WAGNER: Tannhauser (Overture), Zurich Tonhalle Orchestra; Otto Ackermann, conductor.

☐ CHOPIN: Piano Concerto No. 2 in F Minor, Mewton-Wood, pianist, Radio Zurich Orchestra; Walter Goehr, conductor.

☐ HAYDN: Symphony No. 96 in D Major, "Miracle," Winterthur Symphony Orchestra; Walter Goehr, conductor.

☐ HAYDN: Isola Disabitata (Overture), Winterthur Symphony Orchestra; Walter Goehr, conductor.

☐ SCHUBERT: Symphony No. 5 in B Flat Major, Winterthur Symphony Orchestra; Frits Busch, conductor.

☐ MOZART: Symphony No. 36 in C Major, "Linz," Winterthur Symphony Orchestra; Walter Goehr, conductor.

☐ MOZART: German Dances Numbers 1 and 5, Winterthur Symphony Orchestra; Walter Goehr, conductor.

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❁ **SQUEEZE BOTTLE** window washer is designed to spray, clean and wipe a window dry in a single stroke. The complete unit includes the squeeze bottle, filled with a cleaning fluid, and a molded plastic head with a detachable rubber squeegee.

Science News Letter, October 17, 1953

❁ **RAZOR BLADE** sharpener hones double-edged safety blades while they are in the razor, wiping, drying and oiling them at the same time. The device is said to help the user squeeze 30 shaves out of each blade.

Science News Letter, October 17, 1953

❁ **NEW MAPS** show physical features of the U.S. and world much as they would appear in color aerial photographs taken from somewhere in space. These accurate maps can be obtained with state boundaries, capitals and major cities indicated. They are printed on tough paper for framing, or on a plastic-like paper for heavy roll-up duty in classrooms.

Science News Letter, October 17, 1953

❁ **SHOWER STALL** mat, measuring two feet on a side, is made of rubber to provide greater comfort in hard-floor showers. The mat's cup-like grips, shown in the photograph, are said to cling firmly to the shower floor to prevent slipping. Because drainage



holes are perforated in the material, the heat-resistant mat can be left in place when not in use.

Science News Letter, October 17, 1953

❁ **PLASTIC-COATED STEEL** and aluminum sheets now are available in limited production quantities. Bonded to the metal in a new process, the plastic lends excellent

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Science News Letter, October 17, 1953

❁ **SALAD SERVER** consists of a two-bowl unit with an air liner between them. The layer of dead air insulates tossed salads, potato salad and fruit sections, reportedly keeping them cool even after being removed from the refrigerator. The plastic bowl is $8\frac{3}{4}$ inches in diameter and stands $4\frac{1}{2}$ inches tall on three tiny legs.

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❁ **IRON-ON TRIM** decorates the borders of skirts, curtains, aprons and place mats in colorful plastic rickrack and scallop designs. Applied with an iron set at "cotton heat," the trim softens enough to grip the fabric firmly, and will stay on even through automatic washings. It can be used to hide raw edges and torn hems.

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